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EXAMINER	
REDDIG, PETER J	

ART UNIT	PAPER NUMBER
1642	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/726,198	JOHN ET AL.	
	Examiner	Art Unit	
	Peter J. Reddig	1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,7,8,11,14,21,22 and 25-37* is/are pending in the application.

4a) Of the above claim(s) *8,11,14,21 and 22* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,7 and 25-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/27/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The Amendment filed June 20, 2008 in response to the Office Action of September 20, 2007 is acknowledged and has been entered. Applicants have elected species A1, the N-terminally truncated galectin-3 begins with any of the amino acid residues from Gly-1 through Arg-22 of SEQ ID NO: 1 and extends to any of the amino acid residues from Asp- 134 through Ile- 143 of SEQ ID NO: 1, with the beginning amino acid to be Arg-22 of SEQ ID NO:1 and the ending amino acid to be Asp-134 of SEQ NO: 1, and Val-95 as the conserved substitution. Upon review and reconsideration the species will be rejoined for examination.

2. Claims 1-4, 7, and 25-37 are currently being examined.

Rejections Objection/Maintained

Oath/Declaration

3. The Declaration remains objected to for non-initialed and/or non-dated alterations as set forth in section 9, of the Office Action of March 8, 2007.

Applicants argue that a new oath or declaration will be filed, however given that a new oath or declaration has not been filed, the objection remains.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 3, 4 and 7 remain rejected and claims 25-37 are rejected under 35 U.S.C. 112, first paragraph, essentially for the reasons set forth in section 14, pages 6-11 of the Office Action of March 3, 2007.

Examiner argued:

The claims are broadly drawn to a composition comprising an effective amount of N-terminally truncated galectin-3, which has a sequence according to SEQ ID NO: 1 and analogues thereof and a pharmaceutically acceptable carrier.

This means that the claims are inclusive of fragments and variants of SEQ ID NO: 1 because the transitional phrase "according to" is an open-ended term that does not limit the claims to a protein comprising all of the amino acids of SEQ ID NO: 1 and is inclusive of fragments and variants of SEQ ID NO: 1 given that the specification teaches that that the truncated proteins of the present invention which "correspond to" a N-terminally truncated galectin-3 are, in general, homologous amino acid sequences of SEQ ID NO: 1 (see p 24, lines 11-14). Thus claim 2 is drawn to "a" sequence according to SEQ ID NO: 1 which reads on 2 amino acids of SEQ ID NO: 1.

Furthermore, the specification teaches that the present invention provides an N-terminally truncated variant having at least the qualitative biological activity as defined herein and having, for example, at least about 75%, and preferably at least 90%, amino acid homology with the portions that it contains of the polypeptide of SEQ ID NO: 1. The specification teaches that the variant amino acid sequence preferably shares at least 80%, more preferably, greater than 85% sequence homology with the portion that it contains of the sequence of SEQ ID NO: 1. The specification teaches that however, a galectin-3 variant or related compound can exhibit less than 50% sequence homology with the sequence of SEQ ID NO: 1 and still retain the characteristics of a galectin-3 variant as described herein (see p. 24, lines 15-25). It is noted, however, that none of these teachings are in any way limiting.

One cannot extrapolate the teaching of the specification to the scope of the claims because the claims encompass unknown and undefined analogues and fragments of the N-terminally truncated galectin-3/SEQ ID NO: 1 and the unpredictability of protein biochemistry is well known in the art.

In particular, Merck Source/Dorland's Illustrated Medical Dictionary (www.mercksource.com/pp/us/cns/cns_home.jsp) teaches that an analogue " . . . may have a similar or opposite action metabolically". Furthermore, Bowie et al (Science, 1990, 257:1306-1310) teach that an amino acid sequence encodes a message that determines the shape and function of a protein and that it is the ability of these proteins to fold into unique three-dimensional structures that allows them to function and carry out the instructions of the genome and further teaches that the problem of predicting protein structure from sequence data and in turn utilizing predicted structural determinations to ascertain functional aspects of the protein is extremely complex (col. 1, p. 1306). Bowie et al further teach that while it is known that many amino acid substitutions are possible in any given protein, the position within the protein's sequence where such amino acid substitutions can be made with a reasonable expectation of maintaining function are limited. Certain positions in the sequence are critical to the three dimensional structure/function relationship and these regions can tolerate only conservative substitutions or no substitutions (col. 2, p. 1306). The sensitivity of proteins to alterations of even a single amino acid in a sequence are exemplified by Burgess et al (J of Cell Bio. 111:2129-2138, 1990) who teach that replacement of a single lysine reside at position 118 of acidic fibroblast growth factor by glutamic acid led to the substantial loss of heparin binding, receptor binding and biological activity of the protein and by Lazar et al (Molecular and Cellular Biology, 1988, 8:1247-1252) who teach that in transforming growth factor alpha, replacement of aspartic

acid at position 47 with alanine or asparagine did not affect biological activity while replacement with serine or glutamic acid sharply reduced the biological activity of the mitogen. These references demonstrate that even a single amino acid substitution will often dramatically affect the biological activity and characteristics of a protein. Given the lack of teaching of amino acid residues critical to the function of the claimed N-terminally truncated galectin-3, in view of the unlimited and undefined alteration in N-terminally truncated galectin-3, which has a sequence according to SEQ ID NO: 1 and analogues thereof contemplated in the specification and claimed, the function of the broadly claimed N-terminally truncated galectin-3, which has a sequence according to SEQ ID NO: 1 and analogues thereof could not be predicted and would not be expected to be the same as that of an unaltered SEQ ID NO: 1 and the functions and effects of analogues, fragments, and variants could not be extrapolated from the functions and effects of SEQ ID NO: 1 with a reasonable expectation of success.

Clearly, given the teachings of Bowie et al, Lazar et al, and Burgess et al the effects of undefined changes in the N-terminally truncated galectin-3, which has a sequence according to SEQ ID NO: 1 and analogues thereof could not be predicted. Furthermore, the claims require that the composition be an effective amount of N-terminally truncated galectin-3, which has a sequence according to SEQ ID NO: 1 and analogues thereof, but the specification does not teach which amino acids that are critical for the claimed protein to be functionally effective. Thus the specification provides neither information nor guidance on how to make the broadly claimed N-terminally truncated galectin-3. Thus, it would take undue experimentation for one of ordinary skill in the art to practice the invention as claimed.

Applicant is reminded that MPEP 2164.03 teaches "the amount of guidance or direction needed to enable the invention is inversely related to the amount of knowledge in the state of the art as well as the predictability of the art. In re Fisher, 428 F.2d 833, 166 USPQ 18, 24 (CCPA 1970) the amount of guidance or direction refers to that information in the application, as originally filed, that teaches exactly how to make or use the invention. The more that is known in the prior art about the nature of the invention, how to make, and how to use the invention, and the more predictable the art is, the less information needs to be explicitly state in the specification. In contrast, if little is known in the prior art about the nature of the invention and the art is unpredictable, the specification would need more detail as how to make and use the invention in order for it to be enabling. Given only lack of guidance in the specification, no one skilled in the art would accept the assertion that the claimed invention would function as contemplated or as claimed based only on the information in the specification and that known in the art at the time the invention was made.

The specification provides insufficient guidance with regard to these issues and provides no working examples which would provide guidance to one skilled in the art and no evidence has been provided which would allow one of skill in the art to predict that the invention will function as contemplated or claimed with a reasonable expectation of success. For the above reasons, it appears that undue experimentation would be required to practice the claimed invention.

In the Remarks of August 22, 2007, Applicants argue that claims 1-4 and 7 were rejected for lack of enablement. Applicants argue that the Action asserts that the Specification is enabling

for a composition comprising a polypeptide consisting of SEQ ID NO: 1 but does not reasonably provide enablement for analogues thereof. Applicants note that the term "analogues" has been deleted from claim 2. Claim 1 does not refer to analogues. Recitation in new claim 27 to conserved amino acid substitutions at a few explicitly listed positions is enabled by the Specification at Paragraphs [0089]-[0097] and [0232].

Applicants argue that the Action further asserts that the language of the claims, "are inclusive of fragments and variants of SEQ ID Noël...which reads on 2 amino acids of SEQ ID NO:1." Applicants respectfully submit that amended claim 1 limits the claimed N-terminally truncated galectin-3 to a sequence of SEQ ID NO:1 which, "begins with any of the amino acid residues from Gly-1 through Arg-22 of SEQ ID NO:1 and extends to any of the amino acid residues from Asp-134 through Ile-143 of SEQ ID NO:1." Thus, the amended claims do not read on "2 amino acids of SEQ ID NO:1." Nor does amended claim 1 recite "an effective amount." Applicants submit that, as amended, the claimed subject matter is fully enabled by the Specification.

Applicants' arguments have been considered, but have not been found persuasive. Given their broadest reasonable interpretation the claims are not limited to truncations comprising the sequence of SEQ ID NO: 1, but include protein comprising truncations of galectin-3 including variants of varying identity to SEQ ID NO: 1 as contemplated in the specification, see p. 24. Given that these broadly claimed and contemplated truncations of Galectin-3 have not been shown to function like SEQ ID NO: 1 and given the unpredictability of the effect of these changes on the function of Galectin-3 truncations, one of skill in the art could not predictably use the broadly claimed proteins without undue experimentation.

Applicants argue that claims 3 and 4 are amended to recite the composition according to claim 1, "wherein said N-terminally truncated galectin-3 is effective to reduce tumor size in breast cancer," or "wherein said N-terminally truncated galectin-3 is effective to reduce metastasis in breast cancer." Applicants note that, as amended, the language refers to a characteristic of the claimed composition, not an intended use, and therefore does comprise a limitation on claim scope. Applicants submit that the scope of amended claims 3 and 4 is fully enabled by the Specification at least in Example 1 (e.g., Paragraphs [0171], [0173], [0177], [0186], FIG. 6, FIG. 9 and 11-15, Tables 2 and 4-6). The Action notes that the Specification is enabling for the claimed compositions "for use in treating breast cancer or to reduce breast tumor size." Applicants submit that the Specification is equally enabling for the claimed compositions to reduce metastasis in breast cancer and that the amended claims are fully enabled by the Specification.

Applicants' arguments have been considered, but have not been found persuasive because the claims are not limited to truncations comprising the sequence of SEQ ID NO: 1, but include truncations of galectin-3 with variants of varying identity to SEQ ID NO: 1, and given the sensitivity of protein function to even minor sequence changes, in the absence of further guidance or direction, one of skill in the art could not predictably make the broadly claimed truncated galectin-3 that is effective to reduce tumor size in breast cancer or effective to reduce metastasis in breast cancer.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4 and 7 remain rejected and claims 28-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Seetharaman et al. (Journal of Biological Chemistry, 1998 273: 13047-13052), as evidenced by SCORE search results 20070105_174341_us-10-726-198-1.50 aligns.rup and LEG3_HUMAN alignment below) for the reasons set forth in section 17- pages 19-20 of the Office Action of March 8, 2007.

Examiner argued that:

It is noted that the recitation of the uses of the composition in claims 3, 4, and 7 are merely suggestive of intended uses and are not given weight for purposes of comparing the claims with the prior art. The claims read on the active ingredient *per se*, which is N-terminally truncated galectin-3 which has a sequence according to SEQ ID NO: 1 and analogues thereof.

It is noted that the specification teaches in the brief description of Figure 2 that N-terminally truncated galectin-3 is galectin-3C (see p. 14, lines 10-14).

Seetharaman et al. (J. Biol. Chem. 1998 273:13047-13052) teach galectin-3C which consists of residues 107-250 of human galectin-3 (see p. 13047, right col., *Protein Purification and Crystallization*). One of skill in the art would immediately envision putting galectin-3C in a pharmaceutically acceptable carrier like phosphate buffered saline for the storage and use of the protein.

In the Remarks of August 22, 2007, Applicants argue that Rejection of claims under 35 U.S.C. 102 is improper unless each and every claim element is disclosed in a single prior art reference. Applicants argue that as amended, claim 1 recites, "A composition comprising N-terminally truncated galectin-3, wherein the truncated galectin-3 begins with any of the amino acid residues from Gly-1 through Arg-22 of SEQ ID NO:1 and extends to any of the amino acid residues from Asp-134 through Ile-143 of SEQ ID NO:1 and a pharmaceutically acceptable carrier." Applicants argue that Seetharaman does not disclose an N- terminally truncated galectin-3, beginning with any of the amino acid residues from Gly-1 through Arg-22

of SEQ ID NO:I and extending to any of the amino acid residues from Asp-134 through Ile-143 of SEQ ID NO: 1.

Applicants argue that there is no disclosure in Seetharaman of the elements of amended claims 3 and 4, wherein the N-terminally truncated galectin-3 is effective to reduce tumor size or to reduce metastasis in breast cancer.

Applicants also argue that Seetharaman contains no disclosure of the elements of any of new claims 25-36, such as modification of the N-terminally truncated galectin-3 with one or more PEG molecules, attachment of PEG to Cys-66 of SEQ ID NO: l, substitution at specific amino acid residues, or further truncations of the galectin-3 sequence beyond N-terminal truncation at residue 107 of the intact galectin-3 sequence.

Applicants' arguments have been considered, but have not been found persuasive as the claims are not limited to proteins consisting of the recited galectin-3 truncations. Given their broadest reasonable interpretation, the claims are drawn to proteins that comprise the recited N-terminal truncations, thus the galectin-3C which consists of residues 107-250 of human galectin-3 of Seetharaman et al. comprises the claimed galectin-3 truncations and anticipates the claimed protein. Additionally, give that galectin-3C is an N-terminal truncation as claimed in claims 3 and 4, it would inherently be a galectin-3C truncation effective to reduce tumor size or metastasis in breast cancer. Although the reference does not specifically state that the galectin-3C is effective to reduce tumor size or metastasis in breast cancer, the claimed product appears to be the same as the prior art product, absent a showing of unobvious differences. The office does not have the facilities and resources to provide the factual evidence needed in order to establish that the product of the prior art does not possess the same material, structural and functional

characteristics of the claimed product. In the absence of evidence to the contrary, the burden is on the applicant to prove that the claimed method is different from those taught by the prior art and to establish patentable differences. See In re Best 562F.2d 1252, 195 USPQ 430 (CCPA 1977). It is noted that the rejected claims do not include the PEG modified SEQ ID NO: 1 or the specific substitutions.

New Grounds of Objection/Rejection

Specification

5. The amendments to the specification filed 8/22/2007 are objected to because they appear to refer to the location of the sections to be amended by the paragraph number of the published application not the originally filed specification. An amendments referring to the location of the originally filed specification to be amended would obviate this objection.

Appropriate correction is required.

Claim Objections

6. Claim 4 is objected to because of the following informalities: Galectin-3 is misspelled. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. Claims 1, 3-4, 7, and 25-37 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are broadly drawn to the N-terminally truncated galectin-3 that begins with any of the amino acid residues from Gly-1 through Arg-22 of SEQ ID NO: 1 and extends to any

of the amino acid residues from Asp- 134 through Ile- 143 of SEQ ID NO: 1 and wherein said N-terminally truncated is effective to reduce tumor size or reduce metastasis in breast cancer. Given their broadest reasonable interpretation the claims are not limited to truncations comprising the sequence of SEQ ID NO: 1, but include truncations of galectin-3 with varying identity to SEQ ID NO: 1. Thus the genus of galectin-3 truncations is highly variant that varies significantly both in structure and function from each other. The description of SEQ ID NO 1 fails to adequately describe the genus of galectin-3 truncations because the genus tolerates members which differ significantly in both structure and function from SEQ ID NO: 1. One of skill in the art can reasonably conclude that applicant was not in possession of a genus of "N-terminally truncated galectin-3 that begins with any of the amino acid residues from Gly-1 through Arg-22 of SEQ ID NO: 1 and extends to any of the amino acid residues from Asp- 134 through Ile- 143 of SEQ ID NO: 1" at the time the invention was filed.

Although drawn to DNA arts, the findings in University of California v. Eli Lilly and Co., 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997) and Enzo Biochem, Inc. V. Gen-Probe Inc. are relevant to the instant claims. The Federal Circuit addressed the application of the written description requirement to DNA-related inventions in University of California v. Eli Lilly and Co., 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997). The court stated that "[a] written description of an invention involving a chemical genus, like a description of a chemical species, 'requires a precise definition, such as by structure, formula, [or] chemical name,' of the claimed subject matter sufficient to distinguish it from other materials." Id. At 1567, 43 USPQ2d at 1405. The court also stated that a generic statement such as "vertebrate insulin cDNA" or "mammalian insulin cDNA" without more, is not an adequate written description of the genus

because it does not distinguish the genus from others, except by function. It does not specifically define any of the genes that fall within its definition. It does not define any structural features commonly possessed by members of the genus that distinguish them from others. One skilled in the art therefore cannot, as one can do with a fully described genus, visualize or recognize the identity of the members of the genus. A definition by function, as we have previously indicated, does not suffice to define the genus because it is only an indication of what the gene does, rather than what it is. Id. At 1568, 43 USPQ2d at 1406. The court concluded that "naming a type of material generally known to exist, in the absence of knowledge as to what that material consists of, is not a description of that material." Id.

It is noted that as of the filing date a few Galectin-3 truncations were known in the art (for example see Seetharaman et al. (Journal of Biological Chemistry, 1998 273: 13047-13052) previously cited), however, this truncations fails to adequately describe an entire genus because the genus is highly variant encompassing members which differ significantly in structure from the Galectin-3 and SEQ ID NO: 1. Thus, one of skill in the art cannot readily visualize or recognize the identity of members of the genus.

Additionally, claim 35 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

The limitation of "Thr-142 of SEQ ID NO: 1" claimed in claim 35 has no clear support in the specification and the claims as originally filed. Applicants argue on page 12 of the remarks

of 8/22/2007 that New claims 28-36 are individual species within the scope of amended claim 1 and the new claims are supported in the Specification at least at Paragraph [0081].

A review of the specification discloses support for:

> The exact sequences of the set of the polypeptides based on SEQ. ID NO. 2 that can bind to carbohydrates- such as lactose but that do not demonstrate cooperativity in carbohydate binding, hemaglutination, and homotypic aggregation are defined by studies such as those cited above. The data provided herein establishes that N-terminally truncated galectin-3 polypeptides that possess these physical characteristics can be used to treat diseases including cancer by reducing tumorigenicity and metastasis. Thus, by correlating function with activity other polypeptide fragments of the structure shown in SEQ ID NO 2 can be created for use in treating cancer and other diseases. The treatment described herein uses any one or more of a set of polypeptides that includes amino acid sequences of SEQ ID NO 2 beginning with any of the amino acid residues from Tyr-63 through Arg-129, and that extends at least as far as any of the amino acid residues from Asp-241 through Ile-250. The carbohydrate binding ability of the N-terminally truncated galectin-3 proteins can be determined by various methods such as fluorescence polarization (88). Lack of ability of the protein fragments to induce homotypic aggregation of cancer cells expressing galectin-3 or hemagglutination of red blood cells can easily be determined to demonstrate lack of cross-linking ability (34,89).

The suggested support is not found persuasive because SEQ ID NO: 1 does not have a Thr-142. The subject matter claimed in claims 35 broadens the scope of the invention as originally disclosed in the specification.

Claim Rejections - 35 USC § 102

8. Claims 1, 3, 4, 7, 27-34 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Gitt et al. (J. Biol. Chem. 1995, 270:5032-5038).

It is noted that , given their broadest reasonable interpretation the claims are drawn to proteins that comprise the recited N-terminal truncations with varying identity to the sequence of SEQ ID NO: 1 claimed.

It is noted that the recitation of the uses of the composition in claim 7 is merely suggestive of intended use and are not given weight for purposes of comparing the claims with the prior art. The claims read on the active ingredient *per se*, which are the proteins comprising the claimed N-terminally truncated galectin-3.

Gitt et al. teach rat galectin-5, which has a conservative substitution of isoleucine for valine at position 95 of SEQ ID NO: 1, see Fig. 3 and Appendix 1. Gitt et al. teach also teach rat galectin-3 which is a protein that comprises the claimed galectin-3 trucations of claims 1, 3, 4, 7, 27-34 and 37, see Fig. 3 and Appendix 1. One of skill in the art would immediately envision putting galectin-5 in a pharmaceutically acceptable carrier like phosphate buffered saline for the storage and use of the protein.

Although the reference does not specifically state that galectin-5 is effective to reduce tumor size or metastasis in breast cancer, the claimed product appears to be the same as the prior art product, absent a showing of unobvious differences. The office does not have the facilities and resources to provide the factual evidence needed in order to establish that the product of the prior art does not possess the same material, structural and functional characteristics of the claimed product. In the absence of evidence to the contrary, the burden is on the applicant to prove that the claimed method is different from those taught by the prior art and to establish patentable differences. See In re Best 562F.2d 1252, 195 USPQ 430 (CCPA 1977).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-4, 7, 25 and 27-37 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No, 6,967,021 (Panjawani et al. April 27, 2001).

It is noted that the recitation of the uses of the composition in claim 7 is merely suggestive of intended use and are not given weight for purposes of comparing the claims with the prior art. The claims read on the active ingredient *per se*, which are the proteins comprising the claimed N-terminally truncated galectin-3.

It is noted that , given their broadest reasonable interpretation the claims are drawn to proteins that comprise the recited N-terminal truncations with varying identity to the sequence of SEQ ID NO: 1 claimed.

US Patent No, 6,967,021 teaches SEQ ID NO: 3, which has a conservative substitution of isoleucine for valine at position 95 of SEQ ID NO: 1 and comprises a galectin-3 truncation from proline 6 to serine-134, see Appendix 2. US Patent No, 6,967,021 also teaches galectin-3/SEQ ID NO: 1 which comprises the truncation mutants of the invention, see appendix 1. US Patent No, 6,967,021 contemplates pharmaceutical compositions with pharmaceutically acceptable carriers including polyethylene glycol, see abstract, col. 4-lines 3-30, and col. 14 lines 5-20 and 44-50. It is noted that the PEG derivative of galectin-3 in claim 25 is not limited to the PEG being attached to the galectin-3.

Although the reference does not specifically state that SEQ ID NO: 1 or 3 is effective to reduce tumor size or metastasis in breast cancer, the claimed product appears to be the same as the prior art product, absent a showing of unobvious differences. The office does not have the facilities and resources to provide the factual evidence needed in order to establish that the

product of the prior art does not possess the same material, structural and functional characteristics of the claimed product. In the absence of evidence to the contrary, the burden is on the applicant to prove that the claimed method is different from those taught by the prior art and to establish patentable differences. See In re Best 562F.2d 1252, 195 USPQ 430 (CCPA 1977).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No, 6,967,021 (Panjawani et al. April 27, 2001) as applied to claims 1-4, 7 and 27-38 above, and further in view of Veronese (Biomaterials, March 2001, 22:405-17).

US Patent No, 6,967,021 teaches as set forth above, but does not teach attaching PEG molecules to Cys-66 on SEQ ID NO: 1. US Patent No, 6,967,021 additionally teaches using galectin-3/SEQ ID NO: 1 for the treatment of epithelial wounds, see Abstract and claims.

Veronese teaches that PEG conjugation is performed for enhancing the therapeutic potential of proteins, see p. 405-right col. Veronese teaches that PEG conjugation of a protein can maintain its biological functions while inhibiting antibodies, antigen processing cells, and proteolytic enzyme activities toward the protein, see p. 406-left col. Veronese teaches PEGylation of proteins using rare thiols like cysteine, see p. 410 and figure 9.

It would have been *prime facie* obvious for one of skill in the art to conjugate galectin-3/SEQ ID NO: 1 taught by US Patent No, 6,967,021 with PEG because Veronese teaches that PEG conjugation is performed for enhancing the therapeutic potential of proteins, thus one of skill in the art would have been motivated to attach PEG as describe by Veronese to enhance the therapeutic potential of galectin-3/SEQ ID NO: 1 taught by US Patent No, 6,967,02 in the treatment epithelial wounds. One would have been motivated to attach the PEG molecules a Cys-66 as this is the only cysteine in galectin-3, truncated or full length.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claim 1-4, 7 25, 26, and 28-36 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 2 of U.S. Patent No. 6,770,622 in view of Veronese (Biomaterials, March 2001, 22:405-17)..

It is noted that the recitation of the uses of the composition in claim 7 is merely suggestive of intended use and are not given weight for purposes of comparing the claims with the prior art. The claims read on the active ingredient *per se*, which are the proteins comprising the claimed N-terminally truncated galectin-3.

It is noted that , given their broadest reasonable interpretation the claims are drawn to proteins that comprise the recited N-terminal truncations with varying identity to the sequence of SEQ ID NO: 1 claimed.

Although the conflicting claims are not identical, they are not patentably distinct from each other because a polypeptide consisting of SEQ ID NO: 1 is a galectin-3 truncation that begins at Gly-1 and ends at Ile-143 and comprises the claimed truncations. Additionally, given that claim 2 is drawn to using SEQ ID NO: 1 to reduce metastasis and tumor size and given that SEQ ID NO: 1 of U.S. Patent No. 6,770,622 and the instant specification are identical, the claimed product appears to be the same as the prior art product, absent a showing of unobvious differences. The office does not have the facilities and resources to provide the factual evidence needed in order to establish that the product of the prior art does not possess the same material, structural and functional characteristics of the claimed product. In the absence of evidence to the contrary, the burden is on the applicant to prove that the claimed method is different from those

taught by the prior art and to establish patentable differences. See In re Best 562F.2d 1252, 195 USPQ 430 (CCPA 1977).

Veronese teaches that PEG conjugation is performed for enhancing the therapeutic potential of proteins, see p. 405-right col. Veronese teaches that PEG conjugation of a protein can maintain its biological functions while inhibiting antibodies, antigen processing cells, and proteolytic enzyme activities toward the protein, see p. 406-left col. Veronese teaches PEGylation of proteins using rare thiols like cysteine, see p. 410 and figure 9.

It would have been *prime facie* obvious for one of skill in the art to conjugate SEQ ID NO: 1 taught by US Patent No, 6,770,622 with PEG because Veronese teaches that PEG conjugation is performed for enhancing the therapeutic potential of proteins, thus one of skill in the art would have been motivated to attach PEG as describe by Veronese to enhance the therapeutic potential of SEQ ID NO: 1 taught by US Patent No, 6,770,622 in the treatment cancer. One would have been motivated to attach the PEG molecules a Cys-66 as this is the only cysteine in galectin-3, truncated or full length.

12. All other objections and rejections recited in the Office Action of March 8, 2007 are withdrawn.

13. No claims allowed.

14. This action is a **final rejection** and is intended to close the prosecution of this application. Applicant's reply under 37 CFR 1.113 to this action is limited either to an appeal to the Board of Patent Appeals and Interferences or to an amendment complying with the requirements set forth below.

If applicant should desire to appeal any rejection made by the examiner, a Notice of Appeal must be filed within the period for reply identifying the rejected claim or claims appealed. The Notice of Appeal must be accompanied by the required appeal fee.

If applicant should desire to file an amendment, entry of a proposed amendment after final rejection cannot be made as a matter of right unless it merely cancels claims or complies with a formal requirement made earlier. Amendments touching the merits of the application which otherwise might not be proper may be admitted upon a showing a good and sufficient reasons why they are necessary and why they were not presented earlier.

A reply under 37 CFR 1.113 to a final rejection must include the appeal form, or cancellation of, each rejected claim. The filing of an amendment after final rejection, whether or not it is entered, does not stop the running of the statutory period for reply to the final rejection unless the examiner holds the claims to be in condition for allowance. Accordingly, if a Notice of Appeal has not been filed properly within the period for reply, or any extension of this period obtained under either 37 CFR 1.136(a) or (b), the application will become abandoned.

15. Applicant's amendment necessitated the new grounds of rejection. Thus, **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J. Reddig whose telephone number is (571) 272-9031. The examiner can normally be reached on M-F 8:30 a.m.-5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Helms can be reached on (571) 272-0832. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Peter J Reddig/

Examiner, Art Unit 1642

/Karen A Canella/

Primary Examiner, Art Unit 1643

Appendix 1

```
A55932
galectin-5 - rat
N;Alternate names: beta-galactoside binding lectin
C;Species: Rattus norvegicus (Norway rat)
C;Date: 23-Mar-1995 #sequence_revision 05-Apr-1995 #text_change 09-Jul-2004
C;Accession: A55932; EX0077
R;Gitt, M.A.; Wiser, M.F.; Leffler, H.; Herrmann, J.; Xia, Y.R.; Massa, S.M.; Cooper,
D.N.W.; Lusis, A.J.; Barondes, S.H.
J. Biol. Chem. 270, 5032-5038, 1995
A;Title: Sequence and mapping of galectin-5, a beta-galactoside-binding lectin, found
in rat erythrocytes.
A;Reference number: A55932; MUID:95197487; PMID:7890611
A;Accession: A55932
A;Status: preliminary
A;Molecule type: mRNA
A;Residues: 1-145 <GIT>
```

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A;Cross-references: UNIPROT:P47967; UNIPARC:UPI000014A696; GB:L36862; NID:g727175;
PIDN:AAC42050.1; PID:g727176
R;Jung, S.K.; Fujimoto, D.
J. Biochem. 116, 547-553, 1994
A;Title: A novel beta-galactoside-binding lectin in adult rat kidney.
A;Reference number: PX0077; MUID:95155264; PMID:7852273
A;Accession: PX0077
A;Molecule type: protein
A;Residues: 7,'P',9-10,'T',12-19,'X',21-25;30-42;109-111,'N',113,'H',115,'VS',118-
123,'K';125-127,'E',129-141,'X',143,'Q' <JUN>
A;Cross-references: UNIPARC:UPI0000177EDC; UNIPARC:UPI0000177EDD;
UNIPARC:UPI0000177EDE; UNIPARC:UPI0000177EDF
A;Experimental source: kidney
C;Comment: This protein exhibits activity to various saccharides and binds to
Engelbreth-Holm-Swarm tumor laminin and rat plasma fibronectin.
C;Genetics:
A;Gene: LGALS5
C;Superfamily: beta-galactoside-binding lectin
C;Keywords: acetylated amino end; lectin; monomer
F;2/Modified site: acetylated amino end (Ser) (in mature form) #status experimental

  Query Match             36.7%;  Score 276.5;  DB 2;  Length 145;
  Best Local Similarity   41.2%;  Pred. No. 5.6e-21;
  Matches   56;  Conservative   26;  Mismatches   49;  Indels    5;  Gaps    2;

Qy          3 PAGPLIVPYNLPLPGGVVPRMLITILGTVKPNANRIALDFQRGNDVAFHFNPRFNENNRR 62
              |   | ||:   :| |: |   | | | |  :| |  :: : | |:||| ||||:||
Db          9 PYPNLAVPFFTSIPNGLYPSKSIVISGVVLSDAKRFQINLRCGGDIAFHLNPRFDEN--- 65

Qy         63 VIVCNTKLDNNWGREERQ--SVFPFESGKPFKIQVLVEPDHFKVAVNDAHLLQYNHRVKK 120
                 :| ||:::|:|| |||      ||  |: | : :| |   |||||:  |: :|:||:
Db         66 AVVRNTQINNSWGPEERSLPGSMPFSRGQRFSVWILCEGHCFKVAVDGQHICEYSHRLMN 125

Qy        121 LNEISKLGISGDIDLT 136
               | :|: | ::||| ||
Db        126 LPDINTLEVAGDIQLT 141

LEG3_RAT
ID   LEG3_RAT                Reviewed;         262 AA.
AC   P08699;
DT   01-JAN-1988, integrated into UniProtKB/Swiss-Prot.
DT   23-JAN-2007, sequence version 4.
DT   08-APR-2008, entry version 77.
DE   Galectin-3 (Galactose-specific lectin 3) (Mac-2 antigen) (IgE-binding
DE   protein) (35 kDa lectin) (Carbohydrate-binding protein 35) (CBP 35)
DE   (Laminin-binding protein) (Lectin L-29).
GN   Name=Lgals3;
OS   Rattus norvegicus (Rat).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Sciurognathi;
OC   Muroidea; Muridae; Murinae; Rattus.
OX   NCBI_TaxID=10116;
RN   [1]
RP   NUCLEOTIDE SEQUENCE [MRNA].
RX   MEDLINE=88016189; PubMed=2958848;
RA   Albrandt K., Orida N.K., Liu F.-T.;
RT   "An IgE-binding protein with a distinctive repetitive sequence and
RT   homology with an IgG receptor.";
```

```
RL   Proc. Natl. Acad. Sci. U.S.A. 84:6859-6863(1987).
RN   [2]
RP   NUCLEOTIDE SEQUENCE [LARGE SCALE MRNA].
RC   TISSUE=Brain;
RX   PubMed=15489334; DOI=10.1101/gr.2596504;
RG   The MGC Project Team;
RT   "The status, quality, and expansion of the NIH full-length cDNA
RT   project: the Mammalian Gene Collection (MGC).";
RL   Genome Res. 14:2121-2127(2004).
RN   [3]
RP   PROTEIN SEQUENCE OF 120-145.
RX   MEDLINE=90105471; PubMed=2605254; DOI=10.1021/bi00449a039;
RA   Lefler H., Masiarz F.R., Barondes S.H.;
RT   "Soluble lactose-binding vertebrate lectins: a growing family.";
RL   Biochemistry 28:9222-9229(1989).
RN   [4]
RP   NUCLEOTIDE SEQUENCE [MRNA] OF 125-262.
RX   MEDLINE=85216641; PubMed=3858867;
RA   Liu F.-T., Albrandt K., Mendel E., Kulczycki A. Jr., Orida N.K.;
RT   "Identification of an IgE-binding protein by molecular cloning.";
RL   Proc. Natl. Acad. Sci. U.S.A. 82:4100-4104(1985).
RN   [5]
RP   PROTEIN SEQUENCE OF 164-174 AND 223-236, AND MASS SPECTROMETRY.
RC   STRAIN=Sprague-Dawley; TISSUE=Spinal cord;
RA   Lubec G., Afjehi-Sadat L.;
RL   Submitted (NOV-2006) to UniProtKB.
RN   [6]
RP   PARTIAL PROTEIN SEQUENCE, AND ACETYLATION AT ALA-2.
RX   MEDLINE=94075368; PubMed=8253805;
RA   Herrmann J., Turck C.W., Atchison R.E., Huflejt M.E., Poulter L.,
RA   Gitt M.A., Burlingame A.L., Barondes S.H., Leffler H.;
RT   "Primary structure of the soluble lactose binding lectin L-29 from rat
RT   and dog and interaction of its non-collagenous proline-, glycine-,
RT   tyrosine-rich sequence with bacterial and tissue collagenase.";
RL   J. Biol. Chem. 268:26704-26711(1993).
RN   [7]
RP   INTERACTION WITH LYPD3.
RX   PubMed=15729693; DOI=10.1002/ijc.20977;
RA   Paret C., Bourouba M., Beer A., Miyazaki K., Schnoelzer M.,
RA   Fiedler S., Zoeller M.;
RT   "Ly6 family member C4.4A binds laminins 1 and 5, associates with
RT   galectin-3 and supports cell migration.";
RL   Int. J. Cancer 115:724-733(2005).
CC   -!- FUNCTION: Galactose-specific lectin which binds IgE. May mediate
CC       with the alpha-3, beta-1 integrin the stimulation by CSPG4 of
CC       endothelial cells migration (By similarity).
CC   -!- SUBUNIT: Probably forms homo- or heterodimers. Forms a complex
CC       with the ITGA3, ITGB1 and CSPG4. Interacts with LGALS3BP, LYPD3,
CC       CYHR1 and UACA (By similarity).
CC   -!- SUBCELLULAR LOCATION: Nucleus (By similarity). Note=Cytoplasmic in
CC       adenomas and carcinomas. May be secreted by a non-classical
CC       secretory pathway and associate with the cell surface (By
CC       similarity).
CC   -!- SIMILARITY: Contains 1 galectin domain.
```

```
CC   ---------------------------------------------------------------------
CC   Copyrighted by the UniProt Consortium, see http://www.uniprot.org/terms
CC   Distributed under the Creative Commons Attribution-NoDerivs License
CC   ---------------------------------------------------------------------
DR   EMBL; J02962; AAA40828.1; -; mRNA.
DR   EMBL; BC089054; AAH89054.1; -; mRNA.
DR   EMBL; M13697; AAA41378.1; -; mRNA.
DR   PIR; A54889; A54889.
DR   RefSeq; NP_114020.1; -.
DR   UniGene; Rn.764; -.
DR   HSSP; P17931; 1A3K.
DR   SMR; P08699; 125-262.
DR   PhosphoSite; P08699; -.
DR   Ensembl; ENSRNOG00000010645; Rattus norvegicus.
DR   GeneID; 83781; -.
DR   KEGG; rno:83781; -.
DR   RGD; 69356; Lgals3.
DR   ArrayExpress; P08699; -.
DR   GermOnline; ENSRNOG00000010645; Rattus norvegicus.
DR   InterPro; IPR013320; ConA_like_subgrp.
DR   InterPro; IPR015534; Galectin_3.
DR   InterPro; IPR001079; Galectin_bd.
DR   Gene3D; G3DSA:2.60.120.200; ConA_like_subgrp; 1.
DR   PANTHER; PTHR11346:SF26; Galectin_3; 1.
DR   PANTHER; PTHR11346; Galectin_bd; 1.
DR   Pfam; PF00337; Gal-bind_lectin; 1.
DR   SMART; SM00276; GLECT; 1.
DR   PROSITE; PS51304; GALECTIN; 1.
PE   1: Evidence at protein level;
KW   Acetylation; Direct protein sequencing; IgE-binding protein; Lectin;
KW   Nucleus; Phosphoprotein; Repeat.
FT   INIT_MET      1      1       Removed.
FT   CHAIN         2    262       Galectin-3.
FT                                /FTId=PRO_0000076933.
FT   REPEAT       35     43       1.
FT   REPEAT       44     52       2.
FT   REPEAT       53     61       3.
FT   REPEAT       62     70       4.
FT   REPEAT       71     79       5.
FT   REPEAT       80     88       6.
FT   REPEAT       89     98       7; approximate.
FT   REPEAT       99    105       8; approximate.
FT   REPEAT      106    112       9; truncated.
FT   DOMAIN      130    260       Galectin.
FT   REGION       35    112       9 X 9 AA tandem repeats of Y-P-G-X(3)-P-
FT                                [GS]-[AG].
FT   REGION      193    199       Beta-galactoside binding (By similarity).
FT   MOD_RES       2      2       N-acetylalanine.
FT   MOD_RES       6      6       Phosphoserine; by CK1 (By similarity).
FT   DISULFID    185    185       Interchain (By similarity).
FT   CONFLICT     20     20       Q -> R (in Ref. 1; AAA40828).
SQ   SEQUENCE   262 AA;  27202 MW;  EADB994F5EBD493D CRC64;
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Query Match 85.8%; Score 647; DB 1; Length 262;

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  Best Local Similarity   83.2%;  Pred. No. 1.3e-58;
  Matches  119;  Conservative   11;  Mismatches   13;  Indels    0;  Gaps
0;

Qy          1 GAPAGPLIVPYNLPLPGGVVPRMLITILGTVKPNANRIALDFQRGNDVAFHFNPRFNENN 60
              ||| ||| |||::|||||:|||||||:|||||||| | |:|::|||:|||||||||||||
Db        120 GAPTGPLTVPYDMPLPGGVMPRMLITIIGTVKPNANSITLNFKKGNDIAFHFNPRFNENN 179

Qy         61 RRVIVCNTKLDNNWGREERQSVFPFESGKPFKIQVLVEPDHFKVAVNDAHLLQYNHRVKK 120
              ||||||||| |||||||||| |||||||||||||||| ||||||||| ||||||||:|
Db        180 RRVIVCNTKQDNNWGREERQSAFPFESGKPFKIQVLVEADHFKVAVNDVHLLQYNHRMKN 239

Qy        121 LNEISKLGISGDIDLTSASYTMI 143
              | |||:||| ||| ||||| ||
Db        240 LREISQLGIIGDITLTSASHAMI 262
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Appendix 2

```
US-10-133-234A-1
; Sequence 1, Application US/10133234A
; Patent No. 6967021
; GENERAL INFORMATION:
;  APPLICANT: Panjwani et al.
;  TITLE OF INVENTION: Use of Galectin-3 and Galectin-7 to Promote the
;  TITLE OF INVENTION:  Re-Epithelialization of Wounds
;  FILE REFERENCE: 2002458-0006
;  CURRENT APPLICATION NUMBER: US/10/133,234A
;  CURRENT FILING DATE:  2002-04-26
;  NUMBER OF SEQ ID NOS: 28
;  SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 1
;   LENGTH: 250
;   TYPE: PRT
;   ORGANISM: Human
US-10-133-234A-1

  Query Match            100.0%;  Score 754;  DB 2;  Length 250;
  Best Local Similarity   100.0%;  Pred. No. 2.2e-84;
  Matches  143;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

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Db        108 GAPAGPLIVPYNLPLPGGVVPRMLITILGTVKPNANRIALDFQRGNDVAFHFNPRFNENN 167

Qy         61 RRVIVCNTKLDNNWGREERQSVFPFESGKPFKIQVLVEPDHFKVAVNDAHLLQYNHRVKK 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        168 RRVIVCNTKLDNNWGREERQSVFPFESGKPFKIQVLVEPDHFKVAVNDAHLLQYNHRVKK 227

Qy        121 LNEISKLGISGDIDLTSASYTMI 143
              |||||||||||||||||||||||
Db        228 LNEISKLGISGDIDLTSASYTMI 250
RESULT 13

US-10-133-234A-3
; Sequence 3, Application US/10133234A
; Patent No. 6967021
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```
; GENERAL INFORMATION:
;  APPLICANT: Panjwani et al.
;  TITLE OF INVENTION: Use of Galectin-3 and Galectin-7 to Promote the
;  TITLE OF INVENTION:  Re-Epithelialization of Wounds
;  FILE REFERENCE: 2002458-0006
;  CURRENT APPLICATION NUMBER: US/10/133,234A
;  CURRENT FILING DATE:  2002-04-26
;  NUMBER OF SEQ ID NOS: 28
;  SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 3
;   LENGTH: 139
;   TYPE: PRT
;   ORGANISM: Artificial Sequence
;   FEATURE:
;   OTHER INFORMATION: Description of Artificial Sequence:
;   OTHER INFORMATION: Galactoside-binding lectin domain, PF00337.
US-10-133-234A-3

  Query Match             41.4%;  Score 312;  DB 2;  Length 139;
  Best Local Similarity   45.8%;  Pred. No. 3.7e-30;
  Matches   66;  Conservative   25;  Mismatches   39;  Indels   14;  Gaps    6;

Qy          6 PLIVPYNLPLPGGVVPRMLITILGTVKP-NANRIALDFQRG----NDVAFHFNPRFNE-- 58
              | :|  ||    |: |   :|: ||| | || | |::  :|    ||:  ||||||||
Db          1 PGLVALNL----GLKPGKTLTVKGTVAPKNAKRFAVNLGKGSKEENDLVLHFNPRFNEAH 56

Qy         59 NNRRVIVCNTKL--DNNWGREERQSVFPFESGKPFKIQVLVEPDHFKVAVNDAHLLQYNH 116
               ::  :|||:|   || || |:|:: |||::|:||:| : || | ||| ||| |  :: |
Db         57 GDQNTVVCNSKENGDNEWGTEQREAAFPFQAGQPFEISISVEEDKFKVKVNDGHEFEFPH 116

Qy        117 RVKKLNEISKLGISGDIDLTSASY 140
              |: ||  :  ||| ||| |||  :
Db        117 RL-KLEAVQYLGIKGDIKLTSIKF 139
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